

REMARKS

Claims 26-43, 46, 53 and 54 are canceled. Claims 1-25, 44, 45, and 47-52 were previously canceled. Claims 55-78 are added. Therefore, claims 55-78 are now pending in the application. Applicants respectfully submit that the claim amendments are fully supported by the specification and drawings and, as such, no new matter has been introduced by this amendment.

Priority

Applicants have amended the first paragraph of the application (i.e. the cross-reference to related applications) to indicate the relationship of the listed applications from which priority is claimed under 35 U.S.C. §§ 119(e), 120 and 365(c) in compliance 37 C.F.R. § 1.78(a). References to all prior applications were made within the time period set forth in 37 C.F.R. § 1.78(a) and the information concerning the priority claims were recognized by the Office as shown by its inclusion on the first filing receipt. Therefore, the petition under 37 C.F.R. § 1.78(a) and surcharge under 37 C.F.R. § 1.17(t) are not required. Entry of this amendment is respectfully requested.

Claim Rejections -- 35 U.S.C. § 112

Claims 32, 42, 43, 53 and 54 stand rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicants regard as the invention. Claims 32, 42, 43, 53 and 54 were canceled by the above amendment, rendering this rejection moot. Applicants respectfully submit that new claims 55-78 are in compliance with 35 U.S.C. § 112, second paragraph.

Double Patenting

Claim 46 stands rejected on the ground of non-statutory obviousness-type double patenting as being unpatentable over claim 22 of U.S. Patent No. 7,198,201. Claim 46 was canceled by the above amendment, rendering this rejection moot.

Claim Rejections -- 35 U.S.C. § 102(b)

Claims 26-29, 31-35, 46 and 53 stand rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 3,182,916 to Schulz, hereinafter “Schulz”; claims 26-29, 32-35, 46, 53 and 54 stand rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 2,904,263 to Tate et al., hereinafter “Tate ‘263”; and claims 26-29, 32-35, 46 and 53 stand rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 3,680,793 to Tate et al., hereinafter “Tate ‘793”. Claims 26-29, 31-35, 46, 53 and 54 have been canceled as noted above, rendering this rejection moot. However, in view of this rejection, Applicants provide the following remarks in support of the patentability of the pending claims over the prior art of record.

Schulz does not teach or suggest a swirl disk defining a thickness within the range of about 0.003 inch to about 0.03 inch from a sheet material substrate of approximately the same thickness, much less an etched swirl disk, as recited in independent claims 55, 68 and 74. Nor does Schulz teach or suggest a single sheet material swirl disk received between an orifice disk and retaining member in a spray nozzle, as further recited in independent claims 55, 68 and 74. Rather, Schulz teaches a “swirl generator” having “a plurality of superimposed plates [3]”. (See, e.g., Schulz at column 3, lines 35-37). As can be seen, based on the relative sizes of the stacked plates 3 as compared to the socket 6 and housing 7 in FIG. 1 of Schulz, the plates are not formed of an etched sheet material substrate and do not define a thickness within the range of about 0.003 inch to about 0.03 inch, as recited in independent claims 55, 68 and 74. Rather, the stacked plates 3 of Schulz are stamped significantly thicker plates of metal.

Tate ‘263 and Tate ‘793 likewise do not teach or suggest a swirl disk defining a thickness within the range of about 0.003 inch to about 0.03 inch, or a swirl disk formed from an etched sheet material substrate of approximately the same thickness, as recited in independent claims 55, 68 and 74. To the contrary, Tate ‘263 teaches a swirl chamber 25 formed within a machined swirl chamber body 26. (Tate ‘263 at column 1, line 66 – column 5, line 5). As can be seen in FIG. 1 of Tate ‘263, the swirl chamber body 26 is more than twice as thick as the orifice disk 15, and is machined out of a substantial block of metal, not a thin etched sheet material substrate as defined in independent claims 55, 68 and 74. Tate ‘793 also teaches the swirl chamber block

member 14 being several times as thick as the orifice plate 12. Tate '793 further teaches the swirl chamber block 14 being machined out of a block of metal, and does not teach or suggest an etched sheet material substrate as recited in independent claims 55, 68 and 74.

It is therefore respectfully submitted that independent claims 55, 68 and 74 are allowable over the cited references for at least the above reasons. Because claim 56-67, 69-73 and 75-78 depend either directly or indirectly from one of independent claims 55, 68 and 74, and therefore include all of the limitations of one of independent claims 55, 68 and 74, it is respectfully submitted that claim 56-67, 69-73 and 75-78 are allowable for at least the same reasons set forth for independent claims 55, 68 and 74, and for reciting additional patentable subject matter.

Claim Rejections -- 35 U.S.C. § 103(a)

Claims 30, 39-43 and 54 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Schulz. Claims 30, 39-43 and 54 were canceled by the above amendment, rendering this rejection moot. However, for at least the reasons advanced above, Applicants respectfully submit that that Schulz does not disclose all of the features of the claimed invention nor renders the pending claims obvious to one having ordinary skill in the art. To that end, Applicants respectfully submit that the claims invention is patentable over the prior art of record.

Conclusion

All issues raised by the Examiner having been addressed, an early action to that effect is earnestly solicited.

If the Examiner has any questions in connection with this paper, or otherwise if it would facilitate the examination of this application, he is respectfully requested to call the undersigned at the telephone number below.

No fee or extension in addition to that submitted herewith is believed to be required; however, if an additional fee or extension is required, please consider this a petition therefor, and authorization is hereby given to charge our deposit account no. 50-3569.

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